Status of the Claims

Claims 1, 3, 6-8, 10 and 11 are pending.

Claims 1 and 8 have been amended to more clearly define the invention and obviate the rejection under 35 U.S.C. § 112.

Claims 2, 4, 5 and 12 have been canceled.

Claims 3, 6 and 11 were previously presented.

Claims 7 and 10 are original claims

Claim 9 has been withdrawn.

Rejections – 35 USC § 112

In the Office Action, Claims 1, 3-4, 6-8 and 10-11 were rejection under 35 USC § 112, first paragraph for failing to comply with the enablement requirement. In particular the claims were held to describe materials having heating rates with unlimited degree C per second and irradiated at an unlimited intensity. Applicants' totally disagree with the Examiner on this point since the materials used are clearly defined in the claims and obviously do not have unlimited heating rates and certainly the NIR irradiation units used could not possible have an unlimited intensity. To further prosecution and obviate the rejection, Applicants have amended the claims thereby obviating this rejection. Support for the amendment to claim 1 is on page 5, line 19 and to claim 8 on page 5, lines 14-16.

The amendments to the claims should obviate the '112 rejections of the office action.

Claim Rejections – 35 USC § 103

Obviousness Rejection over Blatter et al., Nickerson and Dalton

In the Office Action, Claims 1, 3-4, 7-8 and 10-11 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Applicants' admitted state of the art, Blatter et al. (WO 99/41323) further in view of Nickerson (US 3,860,506) and further in view of Dalton (US3,263,604).

The admitted state of the art according to a previous office action (mailed Jan. 19, 2007) are paragraphs 5 and 6 of the specification (page 2, lines 4-10) which

pointed out that coating non-conductive substrates with powder coating is difficult due to the insufficient grounding of the substrate and that the deposition of a powder coating is uneven and adhesion to the substrate is poor and that it is known to pretreat based substrates with a liquid conductive primer. This admitted prior art does not disclose or suggest Applicants' invention as set forth in the amended claims which requires a first layer of constituents which are not taught, followed by the application of a powder coating and subsequent curing with NIR which also is not taught.

There is no disclosure or suggestion in this admitted prior art or Blatter that would lead one to apply a first layer of a material that is either carbon, magnetite, iron oxide black, tin oxide or antimony oxide as has been set forth in the amended claims. These materials as an applied first layer on a substrate are not taught nor is the concept of applying a first layer suggested by Blatter or the admitted prior art. Nickerson discloses the use of a graphite layer to improve adhesion. Graphite has been deleted in the amended claims since this is the only constituent that was disclosed by Nickerson.

Blatter simply discloses a process for applying a powder coating composition to substrates including temperature sensitive substrates and curing with NIR radiation but does not disclose or suggest the use of the first layer of material set forth in the amended claims. As pointed out in the specification, this first layer provides a shortened melting and curing time of the powder coating and the powder coating melts to provide a smooth and uniform surface coating. Further, the process can be used on a wide variety of substrates, metallic, non metallic, conductive, non-conductive, temperature sensitive and insensitive substrates. (See specification page 3, line 6-14).

Nickerson is directed to forming a conductive coating on non-conductive substrates and this conductive coating is based on graphite which is the only material disclosed by Nickerson. This conductive coating (graphite) is coated onto a substrate and heated to a high sintering temperature of, for example 1700°C for more than 4 hours (temperature is raised from ambient to 1700°C in 20 minutes and is maintained at this temperature for 4 hours) to form a sintered conductive coating. (See Nickerson, col. 9, lines 37-60.) Nickerson discloses a conductive coating but is

in combination with a totally different process which utilizes sintering at high temperatures for long periods of time which would obviously destroy any heat sensitive substrate, such as, wood or plastic. One of the particular advantages of Applicants' process is that it can be used on such substrates. Further, Nickerson is directed to the application of zirconium oxide – yttrium oxide protective coatings and not organic powder coatings as set forth in the specification page 5, lines 20-31. One skilled in the art would not select this solution taught by Nickerson to apply powder coatings and cure them with NIR.

Further, Nickerson only teaches the use of graphite and the particular constituents set forth in Applicants' amended claims are not taught or suggested by Nickerson and the claims have been amended to specifically exclude graphite. In view of the above discussion, one skilled in the art would not logically combine the teachings of Nickerson and Blatter to arrive at Applicants' claimed invention. Even if the combination were made which is not taught or suggested by either references, one still would not arrive at Applicants' claim process but a process that requires the sintering of graphite not used by Applicants which would destroy any temperature sensitive substrate used in such a process. In contrast, Applicants' by the use of the particular constituents of the first layer as set forth in the claims with NIR can use their process of a variety of substrates and in particular temperature sensitive substrates.

In view of the above discussion which clearly shows the inadequacies of Nickerson, Applicants point to Table 1 on page 8 of the specification which shows the surprising and unexpected results of Applicants' invention in comparison to the prior art, such as Blatter. The powder coating compositions prepared in Examples 1 and 2 were applied to two separate aluminum substrates, one did not have a carbon coating layer and the second did have a carbon coating layer on the aluminum substrate and is representative of the invention. As shown by the data, adhesiveness, flow, impact resistance and flexibility of the cured powder coating on the aluminum panel having the carbon layer were superior to the cured powder coating on the aluminum panel that did not have the carbon layer. Further, the curing time using NIR radiation was more than double for the panel without the carbon layer. This experiment clearly shows that physical properties and curing

times of powder coatings applied according to the process of Applicants' invention are superior to those applied by prior techniques such as those taught by Blatter.

Dalton is directed to the formation of electro-responsive blanks comprising a backing and a conductive coating and is not directed to powder coatings or in particular to Applicants' process for the application of powder coatings to substrates or the application of a first high energy absorbing material containing a select group of materials as set forth in the claims and then applying a powder coating thereto and curing with NIR radiation for a set period of time. Dalton suggests that carbon black or graphite can be incorporated into the paper of the backing of the electro-responsive blank but does not teach or suggest that carbon can be used as a high energy absorbing material that can be used in conjunction with a powder coating to form a cured powder coating on a substrate that has excellent adhesion, smoothness, impact resistance and flexibility. Dalton merely shows that graphite and carbon black can be equivalent for use in a paper backing for electro-responsive blanks but that does not mean that they are the same for use in the Nickerson process particularly when Nickerson only teaches the use of graphite. Furthermore, as clearly pointed out above, Nickerson's sintering process is not remotely related to the process set forth in Applicants' amended claims. Applicants' invention is directed to a powder coating application process that comprises steps a) and b) which require specific conditions to provide a powder coating with superior properties by the application of NIR radiation for a set period of time which is not taught nor suggested by Dalton nor by Nickerson nor by the other references cited nor by the combination of these references.

The obviousness rejection based on the admitted state of the art, Blatter, Nickerson and Dalton must be withdrawn and the claims allowed.

Obviousness Rejection Over Blatter, Nickerson, Dalton and Honda

In the Office Action, Claims 1, 3-4, 6-8 and 10-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted state of art in view of Blatter, further in view of Nickerson, in further view of Dalton and further in view of Honda et al. (US 6,800,374). The admitted state of art, Blatter, Nickerson and Dalton have been discussed above and their deficiencies will not be repeated.

Honda is totally irrelevant to Applicants' invention since Honda is directed to forming a cleaning tape and has no relation to the application of a powder coating composition which is Applicants claimed invention. Honda simply shows adjusting the thickness of a carbon layer forming a conductive film. Honda is not directed to a process for applying a powder coating to a substrate that has been coated with a material as set forth in the amended claims that improves the physical properties of the powder coating layer and reduces the curing time using NIR radiation.

The obviousness rejection based on Blatter, Nickerson, Dalton and Honda needs to be withdrawn and the claims allowed.

Summary

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. In order to expedite disposition of this case, the Examiner is invited to contact Applicants' representative at the telephone number below to resolve any remaining issues. If there are any fees due, please charge them to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully submitted,

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